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ABSTRACT

This review considers parents' ability to control their children's consumption of heavily advertised, low-nutrition foods and children's ability to control their own consumption of these foods. In particular, research on television advertising's effect on children and children's development of the ability to delay gratification and resist temptation is examined. The areas in the television advertising research which are addressed are: (1) the extent of television advertising directed to children; (2) the content of children's commercials and techniques used by advertisers to enhance the content; (3) the effects of television commercials on children's actual behavior; (4) the experimental manipulation of children's food preferences via television advertising; and (5) parent-child conflict which is associated with television advertising. Attention is then turned to an examination of research on the experimental manipulation of delay of gratification and resistance to temptation. The effects of observational learning on self-control are also considered. In conclusion, an experimental research paradigm is suggested for providing needed information on the causal relationship between advertising and resistance to temptation. (Author/RH)

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TV Advertising

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Integrating Children's Television Food Advertising Research with
the Delay of Gratification and Resistance to Temptation Research
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Running Head: TV ADVERTISING

Abstract

The establishment of empirical links between television advertisements for low-nutrition foods and children's food consumption behaviors is of major scientific and social policy interest. This review considers parents' ability to control their children's consumption of heavily advertised, low-nutrition foods and children's ability to bring into effect self-control procedures in consuming these foods. In particular, research on television advertising's effect on children and children's development of the ability to delay gratification and resist temptation are examined. Both the consumer psychology and child development literature are considered. The areas in the television advertising research which are addressed are: (a) the extent of television advertising directed to children, (b) the content of children's commercials and techniques used by advertisers to enhance the content, (c) the effects of television commercials on children's actual behavior, (d) the experimental manipulation of children's food preferences via television advertising, and (e) parent-child conflict which is associated with television advertising. This review then turns to examine research on experimental manipulation of delay of gratification and resistance to temptation. The effects of observational learning on self-control is also considered. An experimental research paradigm is suggested for providing needed information on the causal relationship between advertising and resistance to temptation.

Integrating Children's Television Food Advertising Research with
the Delay of Gratification and Resistance to Temptation Research

Children's ability to control their purchasing and consumption of highly sugared, non-nutritious products which are advertised on children's television is of major social policy and scientific interest (Federal Trade Commission, 1978; 1981; National Science Foundation, 1979). The Federal Trade Commission (FTC) Staff Report (1978) pointed out that "advertising undermines the authority of the parent in his or her home on a matter which is ultimately related to health and this is central to legitimate parental concern". However, in 1981, the FTC terminated its proceedings investigating the effect of television commercials on children's eating habits, partly due to political pressures, but also stating that there was a lack of empirical evidence linking the commercials to children's actual consumption. Despite termination of proceedings, consumer concern continues. As this is a matter which regards children's health, the importance of establishing empirical links between television commercials and children's eating remains.

One possible detrimental effect of children's television food commercials is in tempting children to transgress prohibitions placed by their parents in terms of what they may and may not eat. While it is argued by advertisers that parents have the ultimate decision in whether or not their children watch television, it has been pointed out that parents may not "pull the plug because of feelings of helplessness in controlling their child's viewing, fear of making their child into a social outcast, and feelings of a lack of alternate activities to television viewing to keep their children "quiet and off the streets" (Federal Trade Commission, 1978). If parents find they cannot limit their children's viewing, then it appears that one solution would be for parents to provide a counteraction to the low-nutrition commercial messages. One counteraction could entail prohibiting their children from eating low-nutrition foods. The effectiveness of such a prohibition has not been empirically tested. Although studies on children's ability to withstand temptation to transgress or delay gratification are well established in the child development and personality literature, no studies have been attempted to determine the effects that television commercials for low-nutrition foods, in particular, have on children's ability to delay gratification or withstand temptation to transgress a prohibition.

There are two advantages to be gained in studying the effects of television commercials on children's ability to resist temptation. First of all the nature of the effects of this particular complex and dynamic tempting stimulus could be closely examined. Secondly, the questions of consumer groups and legislators regarding causal relationships between television

advertising and children's behavior could be determined in regard to their effects on children's self-control. There is little direct empirical evidence on the effects of television commercials on children's eating behaviors. There is even less direct empirical evidence on the effects of television food advertising on parent/child interaction regarding children's eating habits. There is currently no evidence on television commercial's ability to tempt children to transgress a parental prohibition.

One of the difficulties in researching this topic is in finding a suitable paradigm which will allow more experimental rigor and more clearly suggest a cause and effect relationship. The resistance to temptation and the delay of gratification paradigms both appear to have applicability to studying the effects of television commercials on children's self-control.

Thus, this review will examine and integrate the research literature in the area of both children's television advertising, which is a topic of consumer psychology, and children's ability to delay gratification and resist temptation, which is a topic of child personality development. The areas in the television advertising research which will be addressed are: (a) the extent of television advertising directed to children, (b) the content of children's commercials and special techniques used to enhance such content, (c) the effects of television commercials on children's behavior, (d) experimental manipulation of children's food preferences via television advertising and public service announcements, (e) and parent-child conflict that may be associated with commercials. A more extensive discussion of the television advertising literature, in general, may be found in Peterson (1982) or the National Science Foundation Report (1977).

This review will then integrate the child personality development literature in the areas of (a) experimental manipulation of delay of gratification and resistance to temptation, and (b) the effects of observational learning on delay and resistance to temptation. A research paradigm for experimentally determining television commercials' influence on children's eating behaviors will be suggested.

Extent of Television Advertising Directed to Children

Television has become such an integral part of our everyday activities that it is surprising to realize just how extensive our exposure to it is. The Federal Trade Commission (1978) has estimated that children in the United States from ages 3 through 12 spend about 28 hours per week, or four hours per day watching television. Given this estimate, one can see that most children spend more time watching television than they ever do in school or interacting with their parents (Singer 1983). Television's role in socializing children is potentially great.

Children's exposure to television commercials is extensive. Rubenstein (1978) has estimated that U.S. children between the ages of 2-11 are exposed to more than 20,000 television commercials each year. Most of those commercials are for highly

sugared, low-nutrition foods. Seven thousand of those commercials are for sugared cereals alone. Non-sugared products constitute only 4% of commercials shown on children's Saturday and Sunday morning television.

Although the number of commercials which may be shown on a television program is suggested by the National Association of Broadcasters (NAB) Television and Radio Code (NAB, 1976), this code is voluntary. Not all networks and stations subscribe to it. For those networks which do subscribe to the NAB code, the code allows 4 minutes of commercials during one-half hour of children's viewing time. This equals 8, thirty second commercial messages per one-half hour of programming (Boddewyn, 1979).

Of a number of countries surveyed by Boddewyn (1979), less than one-third restrict the advertising of toys, presweetened cereals and candy. Other products such as tobacco, alcohol, and drugs are restricted by governmental regulation. Until fairly recently, the Federal Trade Commission (FTC) was deliberating the feasibility of instituting a ban on all television advertisements directed to children. There have been a handful of other countries which have done just that, including our neighbor Quebec, in 1980. However, the recommendation of the FTC, following their most recent hearings (1981) was that proceedings to consider further regulation of children's commercials be discontinued. This recommendation was made in response to political pressures against regulation as well as a lack of specific experimental evidence to establish a link between television commercials and children's eating habits. However, as we become more aware of larger, societal health problems related to diet, it becomes increasingly important to continue searching for methodologies which can more clearly answer questions regarding television's effects on children's diet (U.S. Senate Select Committee on Nutrition and Human Needs, 1977).

Content of Television Commercials Directed toward Children

Atkin and Heald (1977) conducted a major study investigating the content of children's television commercials. Content analyses of commercials aired during Saturday morning children's programming have also been provided by Barcus (1971), Gussow (1972), and the Federal Trade Commission, (1978).

Atkin and Heald (1977) conducted their investigation in November 1972 and November 1973. They found that the largest percentage of children's Saturday morning commercials were for toys (50% in 1972 and 66% in 1973), and food (48% in 1972 and 32% in 1973). Within the food categories, cereals (most notably sugared cereals) constituted 27% in 1972 and 17% in 1973; candies, soft drinks, desserts, and fast foods accounted for 21% of ads in 1972 and 15% of ads in 1973. The decline in total number of observed commercials was a result of restricted commercial time; the decline in food ads was not explained by the authors but may have been due to competition for air time by toy manufacturers during the pre-Christmas season in which the study was carried out. Barcus' 1971 data, not obtained during

the Christmas advertising season, indicated that 23% of commercials were for toys and 44% were for candy and cereals.

A number of salient features were identified by Atkin and Heald (1977) which were used to further categorize the television commercials. Those features of commercials included the mode of presentation, display techniques, types of messages claims, claims of nutritional value and tone of the message found in the food commercials for children. Food commercials were mostly presented by way of live action film (28%) with a combination of animated cartoon and live action film next at 35%, and animated cartoon only, last at 27%. In contrast, children's toy commercials were mostly live action film (99%). Most commercials portrayed the product in use at some time during the commercial (100% for toy ads and 97% of food ads). However, it was rare for the ads to present a comparison between their product and another as a selling technique. Only 2% of food commercials and 1% of toy commercials made the explicit suggestion that the child ask the parent to purchase the product.

While toy commercials were most often serious in tone (71%), food commercials were most often humorous (57%). Food ads relied almost exclusively on a fun claim while toy ads often emphasized a claim of feelings of power and being grown-up associated with using the product. In 63% of the food ads, no claim of nutritional value was made, but 25% of food ads mentioned sweetness as a salient feature. Finally, 48% of food ads and 39% of toy ads used slogans or jingles as a vehicle for transmitting product claims. It should be apparent at this point that ads directed to children are very different from ads directed to adults. Ads directed to adults usually make appeals to the audience to recognize the "hard" qualities of products such as price, size, and durability; ads directed to children rarely do this (FTC Report, 1978).

While a detailed analysis of content has not been performed on pro-nutrition commercials and public service announcements, it has been documented that they lack the technical sophistication of the high-budget advertisements for low-nutrition cereals and candy (cf. Goldberg, Gorn, & Gibson, 1978). Most notably, they typically lack the catchy advertising techniques of animation, quick action, attractive models, and magical scenes. These techniques have been shown to be very effective in gaining and holding the attention of young children (Federal Trade Commission, 1978).

Calvert, Huston, Watkins, and Wright (1982) and Greer, Potts, Wright, and Huston (1982) studied the salient formal features of a children's television program and of children's

sugared food and fast food commercials. Calvert et al. (1982) correlated children's visual attention to selected visual and auditory formal features with the children's comprehension of both central and incidental content. A formal salient feature in this study was defined as "rapid character action (movement through space at running speed or faster), moderate character action (movements through space at the speed of a walk), music, sound effects, vocalization (non-word), visual special effects (e.g. slow motion), camera zooms, and camera pans. Non-salient features were child dialogue, adult narration, and low action (characters stationary and exhibiting little movement)" (p. 604).

The kindergarten children who viewed the cartoon in this study recalled incidental content better than central content, whereas the third and fourth grade children recalled central content better than incidental content. Attention to salient features, namely, vocalizations and sound effects was the best predictor of younger children's comprehension, while attention to child dialogue (which was a non-salient feature) was the best predictor of the older children's comprehension.

In general, however, there was a high degree of similarity in the younger and older children's attentional patterns to formal features. Both older and younger children attended to rapid character action, moderate character action, vocalizations, sound effects, visual-spatial effects, pans, and child dialogue. The children were selectively inattentive to zooms, music, and adult narration. Children of both ages recalled central content information better when it was presented using salient features (i.e. action plus dialogue). Feature salience was not associated with better comprehension of incidental content.

Greer et al. (1982) examined the effects of a number of candy, cereal, and fast food commercials, not embedded in programming. They found that in general, low salience commercials produced more attention when presented in a clustered format, while high salience commercials produced more attention when presented in a dispersed format.

Effects of Television Commercials on Children's Behavior

If television advertisements directed to children were not profit generating for manufacturers, then they would not exist. This point cannot be seriously disputed. And yet, the specific effects of, and the mechanisms by which television commercials affect children's behavior is not well understood.

It is known that generally, children younger than 8 do not have a clear understanding that the purpose of ads is to sell the product. At times, they may also have difficulty discriminating the programming from the commercial messages (Blatt, Spencer, & Ward, 1971). Children's "attention" to television commercials also varies according to their age. The format of the commercials and the situation in which the commercial is viewed also determine their attention to commercials. Children older than 8 generally show lower

attention to the commercials, when they are embedded in programming, and have more critical reactions to them (Ward, Levinson, & Wackman, 1971). In a naturalistic viewing setting, children's attention is greatest at the onset of a commercial, and it declines rapidly after the onset. During the showing of a second, contiguous commercial, attention declines even further. A single exposure to a commercial is not sufficient for recognition of the commercial with children less than age 9 (Zuckerman, Ziegler, & Stevenson, 1978). However, children's attention to a commercial is enhanced considerably when they view the commercial with an adult experimenter (Watkins, Calvert, Huston-Stein, & Wright, 1980). Children also attend more to commercials which are fast paced and high in action (Greer, Potts, Wright, & Huston, 1982).

Questionnaire research has shown a positive correlation between the amount of television a child watches and their eating of more sugared cereals and snacks (Sharaga, 1974). It has also shown that food and gum commercials are those most often recalled and that they were rated as the "best liked" advertisements (Ward & Wackman, 1971). This method of measurement, however, is subject to much criticism, often cited for being one dimensional in simplifying the relationship between food commercials and children's behavior.

Children's attempts to influence the parent to purchase food and toys which are advertised on television have also been studied. Lyle and Hoffman (1976) reported that about 70% of children have tried to influence their parents to purchase toys and foods which were advertised on television. In one study (Longstreet & Orme, 1967) 89% of the parents reported buying the requested items. Galst & White (1976) confirmed these questionnaire data by conducting in vivo supermarket observations of children's purchase influence attempts. They found that those children who would work the hardest to keep viewing a commercial on television were also those who directed the most purchase influence attempts to their parent. The evidence is fairly strong that children do make purchase influence attempts and that their attempts are highly correlated with the amount of television they watch.

The effects of television commercials are apparently not limited to consumer behavior. Greer, Potts, Wright, & Huston, 1982 found that following children's viewing of fast paced food commercials which were embedded in programming (to make viewing approximate a more naturalistic setting), children engaged in more aggressive play than children who had seen low paced food commercials. A general excitatory quality of fast-paced food commercials was hypothesized. A fast paced format is not exclusive to food commercials, however. For example, Sesame Street has a fast paced format similar to commercials. Clearly more empirical evidence is needed to determine whether there are differential effects with fast-paced commercials versus fast-paced children's programming.

There is research support demonstrating that television food commercials do influence children's attention, understanding, and preference for advertised foods. However, there are methodological limitations in these studies which preclude the demonstration of cause and effect. There is a clear need for more experimental studies that test more directly the effects of television advertising on children's actual eating behavior (see National Science Foundation, 1977).

Experimental Studies Manipulating Children's Preferences

Few experimental studies have been carried out which demonstrate the relationship between television commercials and children's food preferences and/or eating behavior (Jeffrey, McLellarn, & Fox, 1982). As Peterson (1982) has pointed out there are four distinct levels at which television commercials may exert an effect on children's eating habits. These four levels, constituting a hierarchy of effects model (Gorn & Goldberg, 1976) includes components, from least to most complex, of a) attention, b) learning or knowledge, c) preference, and d) behavior. Which of these effects the child exhibits will depend on a number of factors including prior learning, degree of hunger, and opportunity to engage in the behavior, as well as the salience of the cue to consume. For example, a child may attend to commercials, recall the message, and express a preference for a certain food, yet not eat the food.

Goldberg, Gorn, and Gibson (1978) measured first-grade children's food preferences following exposure to commercials (embedded in cartoon programming) of low-nutrition sugared snack and breakfast foods or commercials of high nutrition snack and breakfast foods. They presented 4.5 minutes of ads, 9 minutes of ads, or no ads. Nine minutes of ads is twice the amount per half-hour suggested by the National Association of Broadcasters Code (1976). Children indicated their food preference by pointing to photographs including six low-nutrition and pro-nutrition snack foods (Pretend Eating Test). After the experiment was completed the experimenter again presented the food boards and asked the child to indicate if the food was "good and healthy" or "bad and unhealthy". Children made few errors made in response to this question (mean of 2.62) and there was no significant difference among groups on this measure.

These researchers found that, at least on a short term basis, children who viewed the low-nutrition commercials chose more low-nutrition, sugared foods for snacks. Those children who viewed the pro-nutrition commercials (Public Service Announcements) chose more non-sugared snack foods. There were significantly more sugared snack foods chosen by those children in the low-nutrition commercial group than children in the no-commercial control group. However, there were no significant differences in the number of high sugar snacks chosen by the children who saw the high-nutrition commercials and those children in the control group. Varying the level of exposure (4.5 to 9 minutes) yielded no significant differences. The

authors hypothesized that repetition over a longer period of time would be necessary to obtain an effect due to the fact that repetitions become more salient after the effects of initial exposure have decayed. The authors also suggested that the differential quality of the typical low-nutrition commercial and the high-nutrition public service announcements may have affected children's desire for the products.

In a later study, Gorn and Goldberg (1980) presented children with a commercial for an ice cream brand that had not yet been introduced to the particular area where the study was being conducted. Actual food consumption measures were used. Eight and ten year old boys viewed from zero to five repeated commercials which were embedded in a half-hour cartoon program. Recall measures (of brand name and number of flavors offered) were most easily achieved, but altering preferences and behaviors required more exposures as well as the use of varied commercials for the product. All experimental groups showed significantly increased preference for the advertised brand. Children who saw three different commercials preferred the advertised brand more than those who saw only one commercial. Exposure to the commercials also increased the children's choice of ice cream, in general, as a snack food. There was no significant increase in the amount of ice cream eaten by children who viewed the commercials although there was a trend for those children viewing repetitions of the same commercial to show a decrease in amount eaten as the number of repetitions increased. However, repeating the same commercial for the third time resulted in a good deal of negative affect and negative comments by the children and that negative affect may have become associated with the product (e.g., see Ray, Sawyer, & Strong, 1971). The negative effect was not observed with children viewing up to five different commercials for the same product.

Jeffrey, Lemnitzer, Hickey, Hess, McLellarn, and Stroud (1980) found that children who were exposed to low-nutrition commercials which were embedded in cartoon programming for foods which were available on the Behavioral Eating Test increased their consumption on two of the three advertised foods while the children exposed to low-nutrition commercials, pro-nutrition commercials, or toy commercials did not increase their consumption of the pro-nutrition foods. However, the large amount of intersubject variability, the short exposure to the commercials, and questionable psychometric properties of the Behavioral Eating Test warrant careful generalization of these results to other foods and populations (Bridgwater, Jeffrey, Walsh, Dawson, & Peterson, 1984).

Galst (1980) studied children's actual selection of snacks following exposure to commercials and public service announcements for pro-nutrition foods. In vivo positive evaluations of the pro-nutrition foods by an adult was included in her design. Three to five year old children never selected non-sugared (pro-nutrition) snacks the majority of the time over

a period of 6 weeks. However, children who viewed the pro-nutrition food commercials and public service announcements and heard positive evaluative comments by the adult post-viewing, reduced their selection of sugared snacks. Without the evaluative comments by the adult, however, no difference in snack selection was evident. Negative comments on low-nutrition commercials made by the adult did not affect children's selection of sugared snacks, presumably because the negative comment (analogous to punishment) did not provide the child with an alternative behavior to perform. These results suggest the usefulness of an adult evaluating the message in commercials in enhancing the effects of pro-nutrition commercials but not in mediating the effects of low-nutrition commercials.

Peterson et al. (1984) exposed kindergarten children to a series of ten, 20-minute videotapes consisting of pro-nutrition programming and pro-nutrition commercials and public service announcements. No adult, in vivo, edification was provided as in the Galst (1980) study. The programming was shown over a period of 10 school days and children were tested on recall, information (Nutrition Information Test), preference (Pretend Eating Test), and behavior (Behavior Eating Test), from 3 to 4 days following exposure to the last of the programming. In general, it was found that children exposed to the pro-nutrition commercials attended to the ads at a high rate, recalled the ads, recalled those ads repeated more frequently at a higher rate, and learned new nutrition concepts. There were no significant changes in food preferences or consumption measures. It appears that the foods children prefer and will actually consume at any given time is a function of a number of variables including the child's familiarity with the food and its sweetness (Birch, 1979). Because of so many influencing factors, consumption is the most difficult level (in terms of the hierarchy of effects model) to change in a consistent and lasting manner.

Another factor which mitigates the effects of pro-nutrition commercials is the large number of low-nutrition commercials that children are exposed to yearly. For example, in the Peterson et al. (1984) study, it was estimated that during the 10 day period of time that the children were viewing the pro-nutrition programming in school, they would view over 330 commercials for low nutrition foods at home (calculation based on Barcus & Wolkin, 1977, estimates). It may be overly optimistic to expect the comparatively brief exposure to pro-nutrition programming to create lasting effects.

In summary, it appears that it is relatively easy to manipulate children's attention to ads and recall of the ads. It is also possible to teach children basic nutrition concepts through television messages. However, changing children's food consumption patterns is much more difficult.

There may be synergistic effects of combining children's "natural" or deeply ingrained preference for sugared foods with television commercials for low-nutrition, high sugar foods.

Parents might be expected to have a difficult time wielding any influence over their children's preference for and consumption of these low-nutrition foods. It is important, therefore, to understand exactly what effects the television commercials have in tempting children to eat foods they or their parents know are unhealthy. It is also important to determine how commercials might contribute to conflict between the parent and child.

Parent-Child Conflict

While experimental studies that will be reviewed here offer some suggestions on the nature of parent-child conflict over advertised toys, it should be noted that no study specifically addresses the issue of parent-child conflict over advertised, sugared foods. In addition, two of these studies which measured conflict relied solely on self-report, the reliability of which must be questioned in lieu of converging behavioral data.

Goldberg and Gorn (1978) have examined, among other "unintended consequences of television advertising to children," the potential parent-child conflict resulting from the child's being influenced by a commercial. Their study demonstrated that after watching a commercial for an attractive toy, preschoolers were more likely than a control group who had not viewed the commercial to prefer the toy. This was in spite of the fact that their mother had judged another toy as better. The children who viewed the commercial also felt that a hypothetical child would not be "happy" after being denied the toy by his father. Additionally, there was some evidence that the children in the experimental group who had seen the toy commercial, felt that the boy would be less likely to want to "play with Daddy" after being presented with a hypothetical situation where a boy was denied his request for the advertised toy.

Sheikh and Moleski (1977) presented first, third, and fifth grade children with a hypothetical situation of a child viewing a commercial for either a toy, food, or clothing. The child was then asked, among other questions, "What happened when they (the parents) said, "No," (to the child's request for the product)? In response to the hypothetical situation, 33% reported unpleasant affect, 23% reported aggression, and 16% reported persistence. Only 23% reported accepting their parent's refusal. Children reported an increase in aggressive responses and a decrease in accepting responses from the first to third grade. The third graders were also making more purchase requests than the first graders. There was, however, a decrease in reported unpleasant affect from the third to the fifth grade.

The relative persuasiveness of parents versus television commercials for toys was studied by Prasad, Rao, and Sheikh (1978). They found that when parents gave negative information on the advertised product in a "power-assertive" manner, 75% of the children went against maternal advice and chose the advertised toy. The trend was reversed for the children of parents who gave information in a "reasoning" manner with more children choosing the unadvertised toy. However, these results were found only for the product judged as less attractive. With

the more attractive product, both types of counter influence were ineffective. This study demonstrated that, at least with toys, two methods of counterinfluence were ineffective when the child had viewed an ad for a toy that was depicted very attractively. However, this study did not specify the nature of any conflict between the parent and child because the child received one of the toys regardless of whether he or she took the parent's advice.

In addition to these experimental studies using self-report measures, correlational and observational studies on children's purchase influence attempts with their parents have been carried out. Ward and Wackman (1971) asked mothers of 5-12 year old, upper and upper middle class children about their child's purchase influence attempts. A negative correlation which approached significance was found between age and purchase influence attempts with older children making somewhat fewer requests than younger children. A significant positive relationship was found between conflict and purchase influence attempts ($r = .18$) and the authors suggested that purchase influence attempts may be a part of a general tendency for the child and parent to disagree and engage in conflict. Additionally, they found that the more restrictions the mother placed on the child's television viewing, the less likely she was to give in to purchase influence attempts. Finally, the more time the mother spent watching television herself was positively correlated with influence attempts and yielding.

An in-supermarket, unobtrusive observation of 516 parent (mostly mother) and child interactions over the purchase of sugared cereals was conducted by Atkin (1978). He found that there was a moderate degree of short-lived parent-child conflict generated by refusal to purchase a requested cereal (from 19% to 30% of interactions depending on the child's age with older children (9-12 years) engaging in less conflict). As might be expected, demands for the cereal were more often met by parental yielding than were even-toned requests for the cereal.

Galst and White (1976) also conducted in vivo supermarket observations. They found that children who would work the hardest to keep a children's commercial airing on television were also those who watched the most commercial television at home and those who directed the most purchase influence to their parents (as measured by in vivo supermarket observations). The type of foods most heavily advertised in the children's programming (sugared cereal and candy) were found to be those foods most heavily requested by children.

Evidence on television commercials' influence on parent/child conflict, so far, is limited by the fact that it is correlational, or that the experimental evidence relies on self-report data alone. More direct experimental studies on television commercial's effects in eliciting parent/child conflict are needed.

Experimental Paradigms for Studying Television
Commercials' Effects on Children's Eating

Two paradigms which have had wide use in child personality research may be useful in testing the effects of television advertising on children's behavior. These are the delay of gratification and the resistance to temptation paradigms. There are many similarities between television commercials as a tempting stimulus and stimuli used to tempt children in the delay and temptation research. This experimental methodology for studying the effects of various situations or stimuli on children's self-control appears to be applicable to studying the effects of television commercials as well. While these two paradigms have many commonalities they have some important differences which may make the resistance to temptation paradigm more viable for studying children's lack of control, especially that which could be a precursor to parent/child conflict.

Delay of Gratification and Resistance to Temptation Paradigms

The methods used to study children's ability to delay gratification and the methods used in studying children's ability to resist temptation are similar. Both abilities are integral to self-control and adequate socialization. Children must be able to resist temptation in order to delay achieving gratification since in a natural state, temptations constantly occur to make delaying difficult.

Some basic distinctions emerge, however in terms of the process involved in the two paradigms. First of all, in temptation studies, the transgression is external, in breaking a promise to the experimenter to not engage in the tempting activity. Honesty is an issue in this paradigm. In delay studies, the "transgression" is internal. That is, it is imposed by the child himself or herself and simply reflects the child's decision not to wait any longer and, therefore, forfeit a preferred reward for a non-preferred reward. Patience appears to be more of an issue in the delay paradigm. In delay studies the "transgression", in theory at least, carries no threat of external consequences. That is, it is "O.K." with the experimenter no matter what the child decides to do.

The dependent measures used in the two paradigms are also different. In temptation studies, the measures are usually latency to transgress and extent of transgression (e.g. how long they looked at a forbidden object or how much they ate of a forbidden food). Occasionally denial of the transgression is also used as a dependent measure. In delay studies, the dependent measure is latency to signal the experimenter to return which terminates the waiting situation for the child, but in doing so, it leads the child into accepting a less-preferred reward.

Usually, in temptation studies the distractor enticing the children to delay is very active. For example, Patterson and Mischel (1975, 1976) have used a recorded voice on a toy box urging the children to stop working and play with their toys. However, the tempting stimulus may also be passive such as in

the child coming to realize that the only way to win a game or accomplish a task set up is to transgress and cheat (Mischel & Gilligan, 1964; Winston & Redd, 1976). In delay studies, the tempting stimulus is usually passive and serves to remind the child of the contingency. As an example, the food or toy rewards are often simply left in the child's view (Mischel, Ebbesen, & Zeiss, 1973) or depicted symbolically by slides for the child to view while waiting (Mischel & Moore, 1980).

The dependent measures used in the two paradigms are also different. In temptation studies, the measures are usually latency to transgress and extent of transgression (e.g. how long they looked at a forbidden object or how much they ate of a forbidden food). Occasionally denial of the transgression is also used as a dependent measure. In delay studies, the dependent measure is latency to signal the experimenter to return which terminates the waiting situation for the child, but in doing so, it leads the child into accepting a less-preferred reward.

Usually, in temptation studies the distractor enticing the children to delay is very active. For example, Patterson and Mischel (1975, 1976) have used a recorded voice on a toy box urging the children to stop working and play with their toys. However, the tempting stimulus may also be passive such as in the child coming to realize that the only way to win a game or accomplish a task set up is to transgress and cheat (Mischel & Gilligan, 1964; Winston & Redd, 1976). In delay studies, the tempting stimulus is usually passive and serves to remind the child of the contingency. As an example, the food or toy rewards are often simply left in the child's view (Mischel, Ebbesen, & Zeiss, 1973) or depicted symbolically by slides for the child to view while waiting (Mischel & Moore, 1980).

Delay of Gratification Studies

Children's ability to delay gratification for rewards has been researched extensively by Mischel and his colleagues (Mischel & Baker, 1973; Mischel & Ebbesen, 1970; Mischel, Ebbesen, & Zeiss, 1972; Mischel & Moore, 1973; Mischel & Moore, 1979; Moore, Mischel & Zeiss, 1976; Patterson & Mischel, 1975, 1976). The basic experimental paradigm in the delay of gratification studies involves placing preschool age children in a situation where they have a choice of either obtaining a less preferred reward immediately by signaling the experimenter that they wish to terminate a waiting situation, or obtaining a more preferred reward by waiting until the experimenter returns on his or her own.

Mischel and Ebbesen (1970) found that attending to a delayed reward hindered children's ability to effectively delay gratification. They therefore hypothesized that avoiding or suppressing cognitions and not attending to the enticing stimulus facilitated delaying. In the first of three experiments by Mischel, Ebbesen, and Zeiss (1972) children were presented with both their preferred but delayed and their immediately

available but non-preferred food reward (choosing between a marshmallow and a pretzel as preferred and non-preferred)). The children were presented with one of two distraction strategies, either an external activity (play with a toy) or an internal, cognitive activity (instructions to think pleasant thoughts). In addition to a no treatment control group there was a control group which played with a toy but was not under a reward contingency. There was an additional control group that thought pleasant thoughts, but, similarly, was not under a reward contingency. That is, they received their preferred reward no matter how long they waited. With the three groups who were waiting for the contingent reward, the group which was thinking pleasant thoughts (cognitive distraction) waited the longest. The group which was playing with the toy (external distraction) waited the next longest, and the group with no distraction waited on the average less than a minute. These results have been replicated by Schack & Massari (1973) with first grade children also waiting longer when rewards were not physically present. The children in the non-contingent waiting groups waited a comparable amount of time to the children in the contingent group with no distractor.

Their third experiment in the series examined the effect of physically removing the rewards from the environment. In all three of the groups ("think fun," "think rewards," and no instruction) the immediate and delayed rewards were taken out of the children's sight during the waiting period. The mean waiting periods for the "think fun" control group and the "no ideation" control group were comparable at 14.48 and 12.86 minutes respectively. The mean waiting time for the group that was thinking about the rewards was only .78 minutes. Obviously, even if the rewards are not present in vivo the child is unable to delay gratification if he or she is cognitively anticipating the reward.

In summarizing the results of these two experiments, it appears that children are unable to effectively delay gratification of rewards in those situations where (a) their receiving the food reward is not contingent on their waiting, and (b) they are actively thinking about the food rewards, both when the food rewards are in their visual presence and when they are not in their visual presence.

In a subsequent study, Mischel and Moore (1973) examined the effects of a symbolic presentation of the rewards (slides) on preschool children's ability to delay gratification. Contrary to their expectations, attention to the symbolic representation of the reward substantially enhanced children's ability to delay gratification. The authors hypothesized that the children's attention to the symbolic reward did not influence their consummatory behavior because of its abstract nature. That is, a slide itself could not be consumed. Therefore, the slide was not effective in arousing consummatory behavior in the children. Instead, they proposed that the slides served more as a "reminder to sustain delay behavior."

Mischel and Baker (1975) examined the effects of cognitive representation of the rewards. They found that focusing on the consummatory nature of the foods decreased the preschool child's ability to delay gratification. This was also found by Miller, Weinstein, & Karniol (1978) with older children ($M = 8.7$ years). Conversely, focusing on the nonconsummatory nature of the foods (which was achieved by cognitively transforming the food into a non-food object, e.g., thinking of marshmallows as clouds) facilitated delay. Further research in which the children were taught to cognitively transform the real rewards into pictures and the pictures into real rewards (Moore, Mischel, & Zeiss, 1976) revealed that the manner in which the child cognitively represented the actual reward was much more predictive of his or her delay behavior than whether the actual reward stimulus was in his or her presence.

In a study in which the slide of the actual object was combined with instruction to cognitively focus on the consummatory qualities of the actual rewards, Mischel and Moore (1980) found that children delayed for a significantly shorter period of time when they received the slide only, indicating that the consummatory information was overriding the previously found delay enhancing qualities of the slide.

To summarize, it appears that when the actual reward is presented to the child it interferes with the child's ability to delay, due to the fact that it is cognitively associated with consummatory behavior. The symbolic reward, at least when it is presented in slide form, facilitates delay. It is evident that the cognitive component, that is, the child's thinking of the consummatory nature of the food or thinking of the picture of food as real food, is the most predictive of whether or not the child's ability to delay gratification will be hindered or enhanced. Mischel and Moore (1973) conclude that:

Attention directed at the more abstract or informative cue properties of the reward stimulus (regardless of their mode of presentation) should sustain delay behavior at least as effectively as self-distraction; but attention to the motivational or arousing qualities of the rewards should increase the frustration of delay and interfere with effective self-control. (p.179)

A recent study by Dawson, Jeffrey, Peterson, Sommers, and Wilson (in press) examined the effects of television commercials as a symbolic representation in the delay of gratification paradigm. In this study kindergarten age children viewed either a low-nutrition food ad, a toy ad, or no ad. Children in all groups had the food reward physically present. Children waiting for a food reward in a no-television commercial condition had substantially shorter waiting times than children in a food ad or toy ad condition. However, there were no significant differences between the food ad or toy ad in terms of amount of time waited. A post hoc analysis suggested that both the food ad

and the toy ad had as their most salient feature to the children, not consummatory or play aspects, respectively. Instead, the salient feature appeared to be the "fun" aspect in both ads. Thus, this study replicated the results of Mischel, Ebbesen, & Zeiss (1972) where it was found that by generating "fun" thoughts in the waiting situation, delay was facilitated.

Other Factors Which Influence Delay Behavior

Age has consistently been shown to influence a child's ability to delay and resist temptation. Miller, Weinstein, and Karniol (1978) and Toner and Smith (1977) found that older children ($M = 8.7$ years) were able to delay longer than younger children ($M = 5.3$ years) but only when no strategies to aid the younger children in delaying were provided. Generally, at about age 7, children begin to demonstrate a change in naturally generated delay strategies, finding those that will most effectively avoid frustrative arousal. Those strategies involve depicting the delay stimulus more abstractly (Moore, Mischel & Zeiss, 1976; Yates & Mischel, 1979).

The mother's level of education has also been shown to be a factor influencing children's delay. Jones, Rickel, & Smith (1980) found that preschoolers whose mothers were better educated were more likely to suggest waiting for a desired toy in a self-report delay of gratification situation. Additionally, low socioeconomic status has been shown to be a predictor of children's self-reported delay behavior (Zytkoskee, Strickland & Watson, 1971) with children of lower socioeconomic status reporting less willingness to delay.

Weight status has also been shown to be associated with self-reported willingness to delay gratification. Obese children from age 6-11 exhibited small but, nonetheless, significant differences in preferring immediate rewards but only on food choice reward pairs (Johnson, Parry, & Drabman, 1978).

Additionally, whether or not the delay is self-imposed (as it has been in all the studies heretofore reviewed) or externally imposed, meaning that there is a set amount of time the child must wait regardless, has been studied. In an externally imposed delay situation, transgression (or terminating delay) is not possible. The purpose of these studies has been to determine strategies children use for biding time until the reward is finally available. Yates and Mischel (1979) found that in both externally and self-imposed delay situations, preschoolers did not adjust their viewing strategies. They continued to prefer viewing real stimuli rather than symbolic representations of the stimuli even though viewing real stimuli greatly increased their frustration. In contrast, older children prefer to view irrelevant, non-food stimuli while waiting for food rewards.

Miller and Karniol (1976) examined differential time estimates made by third grade children either in an externally or self-imposed delay situation. They found that children who had the reward physically present and delay externally imposed, gave shorter time estimates than subjects with their rewards

physically present but delay self-imposed. The shorter time estimates were interpreted as indicating less frustration in the former group where delay was externally imposed.

The child's affect during the delay situation has also been shown to influence children's delay behavior. Mischel, Ebbesen, and Zeiss (1972) found that children who were thinking sad thoughts were unable to delay any longer than children viewing the actual rewards with no delay strategy provided. Presumably this effect was obtained due to the frustration related to thinking the sad thoughts added to the already frustrating presence of the food rewards.

Schwarz and Pollack (1977) found that following a negative mood induction third and fourth grade children chose fewer delayed rewards, as measured by self-report, than children who had undergone a positive mood induction. The same pattern of results have been found by Moore, Clyburn and Underwood (1976) using a behavioral measure of delay. Three to five-year-old children in a sad mood induction group more often chose the smaller, immediately available reward (a pretzel now or a lollipop after lunch) whereas children in the happy mood induction group more often chose the larger, delayed reward.

Resistance to Temptation Studies

While there are similarities between stimuli which have been used to enhance or hinder delay and television commercials for low nutrition foods, television commercials may be more analogous to the more active enticing stimuli used in resistance to temptation studies. Research on children's resistance to temptation have focused in the areas of (a) cheating in school (Grim, Kohlberg & White, 1968), (b) cheating on a competitive task where cheating was necessary to succeed (Mischel & Gilligan, 1964), (c) imitating televised models who transgress a prohibition to not play with a certain toy (Wolf, 1972; Wolf & Cheyne, 1972), (d) resisting distractions from a task which the child has promised to finish (Patterson & Mischel, 1975; Patterson & Mischel, 1976), (e) resisting temptation to look at a surprise (Kanfer & Zich, 1974) or the experimenter setting up attractive toys (Hartig & Kanfer, 1973), and (f) transgressing a prohibition to touch a toy after having received consistent or inconsistent prohibitive or permissive instructions (Stouwie, 1971, 1972).

Hartig and Kanfer (1973) conducted one of the initial notable experiments in this area. In their study, a preschool age child was placed in a room which had numerous attractive toys on a table set up behind the child. The experimenter told the child that she had to leave for a short while. She asked the child to not turn around and look at the toys until she returned because it would spoil the surprise and would be bad to do so. She then assured the child of privacy by saying that she would knock before reentering the room. The child was left alone in the room for ten minutes.

These studies were primarily oriented toward determining cognitive strategies that could aid children in resisting

temptation. The purpose of this study was, therefore, to test five different verbalization strategies to help children resist temptation. The strategies employed were: verbalization positive ("If I don't look at the toy, I will be a good boy (girl)"); verbalization negative ("If I look at the toy, I will be a bad boy (girl)"); verbalization control ("Hickory, dickory, dock, the mouse went up the clock"); and a no verbalization control. Dependent measures were obtained by unobtrusive observation. They consisted of latency of time to turn around and look at the toys and amount and content of the child's verbalizations during this period. Additionally denial of transgression was measured by asking the child if he or she had looked at the toys in the experimenter's absence. It was found that children in the first three verbalization groups (positive, negative, and instruction) showed significantly more self-control than children in the last two groups (irrelevant verbalization and no verbalization) demonstrating that the actual content of the verbalization was an important factor in delaying transgression. There was no difference between the group of children who focused on the positive aspect of obedience and the group that focused on the negative aspect of transgression. Younger children were found to wait a shorter period than older children but then the older children made significantly more use of the verbal self-instructions. Therefore, it appeared that the difference was in the ability to verbalize effectively, not the age per se.

Kanfer and Zich (1974) studied the self-control of preschool children in a similar situation. Again children were presented with controlling verbalizations (positive consequences of non-transgression) but they were pre-recorded in either the child's voice or the experimenter's voice. The children were also given a task to work on while the experimenter was gone. The experimenter's presence or absence during training was also a factor studied as was the sex of the child. It was found that the verbalization increased the children's self-control but that this effect was dependent on whether the experimenter was absent or present with an absent experimenter resulting in better self-control for the child. Without a verbalization controlling response there was no difference between the groups with the experimenter absent or present (external control). Boys were also found to transgress sooner than girls.

Patterson and Mischel (1975) used a slightly different procedure in testing resistance to temptation. In their procedure, preschool children had to complete a long, repetitive task while being distracted by a device known as "Mr. Clown Box." Mr. Clown Box was described as:

A large wooden box with a clown's face painted in bright colors in the front. Two compartments were placed, one on either side of the clown's face. When the lights were turned on inside of a compartment objects placed inside on a drum were visible through the window made of one-way glass...A speaker was hidden

learning in children. For example, attractive, status models are shown in attractive situations having fun. The message to the children is that having and doing fun things is somehow related to consuming the advertised food. This next section will examine the work of Bandura and others in the area of television and observational learning in children.

Effects of Observational Learning on Children's Delaying Gratification and Transgressing a Prohibition

Bandura and Mischel (1965) have shown that fourth and fifth grade children who initially showed a self-reported preference for delayed, over immediate and less valued rewards, could be influenced by both a live adult model and symbolic model to change their delay choices to immediate choices. The children maintain this pattern of choice 4-5 weeks following the intervention. The same pattern was evident with children who initially preferred immediate choices. Their preference reversed to that for delayed rewards after observing an adult model who expressed a preference for delayed choices.

Observational learning has also been shown to influence children's aggressive behavior. Bandura, Ross, & Ross (1963) studied the effects of filmed aggressive models on children's aggressive behaviors. This study demonstrated the effects that salient, attractive models engaging in "bad," often prohibited, behaviors have on children's actual performance of those behaviors. One group of children (mean age = 4yrs. 4 mos.) observed real-life models pommeling a Bobo doll while another group of children observed these same acts by real-life models videotaped. A third group observed an aggressive cartoon character (a human costumed as a cat) on videotape performing the same act. Following this exposure the children were placed in a frustrating situation where they were asked to stop playing with the experimenter's very attractive toys because "these were her very best toys; that she did not let just anyone play with them, and that she had decided to reserve them for some other children." Children in all experimental groups exhibited almost twice the amount of imitative aggression as the children who did not view the aggressive acts, showing that televised models were as effective as live behavioral models in influencing children's aggressive behavior. The form of the acts in addition to their frequency was also affected by the model's aggressive acts. The suggestion that only deviant children learn aggressive behaviors through viewing aggression (e.g., Schramm, Lyle, & Parker, 1961) was not supported by these results.

Wolf and Cheyne (1972) found similar results in terms of the influencing effect of real and televised models on children's playing with a forbidden toy. Second and third grade boys observed either a live behavioral, videotaped behavioral, or live verbal peer model either conform to or transgress a prohibition to not play with a certain toy. Live behavioral and videotaped behavioral models had the greatest effect on both conforming and transgressing. In another study, Wolf (1972) used videotaped models who were giving either consistent or deviant

verbalizations in regard to playing with a forbidden toy. He found that the children exposed to a deviant model transgressed for a longer period than children exposed to a consistent model. In a one month follow-up of these results, it was found that the behavior produced by observing the transgressing models was more lasting than the behavior produced by observing the conforming models.

Research which has concluded that children imitating more readily models who are deviating than those who are conforming has been criticized on the basis that the conforming models used in that research were confounded with other variables which affected the children's response inhibition. Bussey and Perry (1977), working with 8 year old boys found that in addition to the modeling of the resistance to deviation, that (a) modeling of a task incompatible with performing the deviant response and (b) having that task available to the child during the experimental manipulation contributed independently to the boys' ability to resist temptation to deviate. They therefore concluded that models were effective in inhibiting deviant behavior and that the process involved in inhibiting behavior was an attitudinal change whereupon the children devalued the deviant activity. It appears then that having a task available for the children to do during the experiment may inhibit deviation as much as their observing an inhibiting model.

Grusec, Kuczynski, Rushton, and Simutis (1979) found that four and five year olds who had seen a live model deviate from task (in order to play with attractive toys) were quicker to deviate and deviated from the task for a longer period of time than children who had not seen a model. And, as in the Bussey and Perry (1977) study, children who had observed a model resisting deviating from a task did not deviate from their task as quickly and worked longer at a repetitive task. In some situations, then, imitation may proceed as readily with children when the model is conforming as when the model is deviating.

Conclusion

Experimental studies have been done in the area of the effects of low-nutrition, television commercials on children's nutrition knowledge and food preferences. However, there is a large gap in research in the area of the effects of television commercials on children's self-control. Understanding television commercials' effect on children is important not only from a theoretical point of view in understanding the nature of television commercials as one tempting stimulus. It is also important from a social policy point of view in evaluating the potential effectiveness of parents alone as regulators of children's viewing of television and purchasing of advertised products. Presumably, television commercials for sugared foods do influence children to buy and consume those foods. However, the specific effects and mechanisms by which low-nutrition television commercials influence children's eating habits has not been experimentally assessed. Previous research has focused on one potential result of children being influenced or tempted

by television commercials-- parent/child conflict over obtaining an advertised product. This research has been limited, however, by its reliance on correlation data and/or self-report measures. More controlled, experimental studies are needed at this stage to directly measure the manner and degree of any tempting effects of low-nutrition television commercials.

Experimental paradigms which have had wide use in the child personality literature, the delay of gratification and resistance to temptation paradigms, appear to have applicability to experimentally assessing the effects that television commercials for low nutrition foods have on children's ability to use self-control. Children's self-control related to ability to delay gratification is an important concern. However, the commercials' influence on children's ability to resist temptation is an even more important issue as it is central to both the potential undermining of children's self-control and the creation of parent/child conflict if parental prohibitions regarding consumption of low nutrition foods are not heeded.

The resistance to temptation paradigm, then, appears to provide not only a feasible, but a meaningful methodology for experimentally studying commercials' effects on children's self-control. Research should focus on determining the differential effects of low-nutrition and pro-nutrition television commercials on children's ability to resist temptation, following a parental prohibition. This is an area in the television advertising research which is deficient. Studies are needed to determine the viability of the resistance to temptation paradigm as it potentially lends a more direct method of determining a cause/effect link between the low-nutrition commercials children view on television and their ability to resist temptation for those foods. In this area, where children's health is of concern answers to these questions are clearly needed.

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Footnotes

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